

Grade 5

Unit 6

Coordinate Geometry

Student Workbook

HOMEWORK

Name:

Name _____

Date _____

1. Circle the expression equivalent to “the difference between 7 and 4, divided by a fifth.”

$7 + (4 \div \frac{1}{5})$

$\frac{7-4}{5}$

$(7 - 4) \div \frac{1}{5}$

$\frac{1}{5} \div (7 - 4)$

2. Circle the expression(s) equivalent to “42 divided by the sum of $\frac{2}{3}$ and $\frac{3}{4}$.”

$(\frac{2}{3} + \frac{3}{4}) \div 42$

$(42 \div \frac{2}{3}) + \frac{3}{4}$

$42 \div (\frac{2}{3} + \frac{3}{4})$

$\frac{42}{\frac{2}{3} + \frac{3}{4}}$

3. Fill in the chart by writing the equivalent numerical expression or expression in word form.

	Expression in word form	Numerical expression
a.	A fourth as much as the sum of $3\frac{1}{8}$ and 4.5	
b.		$(3\frac{1}{8} + 4.5) \div 5$
c.	Multiply $\frac{3}{5}$ by 5.8, then halve the product	
d.		$\frac{1}{6} \times (4.8 - \frac{1}{2})$
e.		$8 - (\frac{1}{2} \div 9)$

4. Compare the expressions in 3(a) and 3(b). Without evaluating, identify the expression that is greater. Explain how you know.

5. Evaluate the following expressions.

a. $(11 - 6) \div \frac{1}{6}$

b. $\frac{9}{5} \times (4 \times \frac{1}{6})$

c. $\frac{1}{10} \div (5 \div \frac{1}{2})$

d. $\frac{3}{4} \times \frac{2}{5} \times \frac{4}{3}$

e. 50 divided by the difference between $\frac{3}{4}$ and $\frac{5}{8}$

6. Lee is sending out 32 birthday party invitations. She gives 5 invitations to her mom to give to family members. Lee mails a third of the rest, and then she takes a break to walk her dog.

a. Write a numerical expression to describe how many invitations Lee has already mailed.

b. Which expression matches how many invitations still need to be sent out?

$$32 - 5 - \frac{1}{3}(32 - 5)$$

$$\frac{2}{3} \times 32 - 5$$

$$(32 - 5) \div \frac{1}{3}$$

$$\frac{1}{3} \times (32 - 5)$$



Lesson 32:

Interpret and evaluate numerical expressions including the language of scaling and fraction division.
Date: 11/10/13

engage^{ny}

4.H.15

Name _____

Date _____

1. Chase volunteers at an animal shelter after school, feeding and playing with the cats.
 - a. If he can make 5 servings of cat food from a third of a kilogram of food, how much does one serving weigh?
 - b. If Chase wants to give this same serving size to each of 20 cats, how many kilograms of food will he need?
2. Anouk has 4.75 pounds of meat. She uses a quarter pound of meat to make one hamburger.
 - a. How many hamburgers can Anouk make with the meat she has?
 - b. Sometimes Anouk makes sliders. Each slider is half as much meat as is used for a regular hamburger. How many sliders could Anouk make with the 4.75 pounds?



Lesson 33:

Date:

Create story contexts for numerical expressions and tape diagrams, and solve word problems.

11/10/13

engage^{ny}

4.H.30

3. Ms. Geronimo has a \$10 gift certificate to her local bakery.
- a. If she buys a slice of pie for \$2.20 and uses the rest of the gift certificate to buy chocolate macaroons that cost \$0.60 each, how many macaroons can Ms. Geronimo buy?

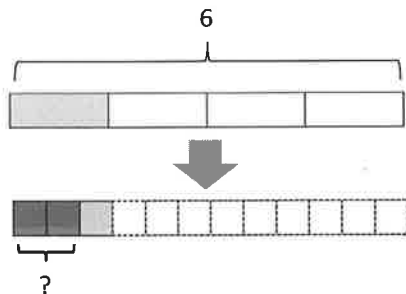
- b. If she changes her mind and instead buys a loaf of bread for \$4.60 and uses the rest to buy cookies that cost $1\frac{1}{2}$ times as much as the macaroons, how many cookies can she buy?

4. Create a story context for the following expressions.

a. $(5\frac{1}{4} - 2\frac{1}{8}) \div 4$

b. $4 \times (\frac{4.8}{0.8})$

5. Create a story context for the following tape diagram.

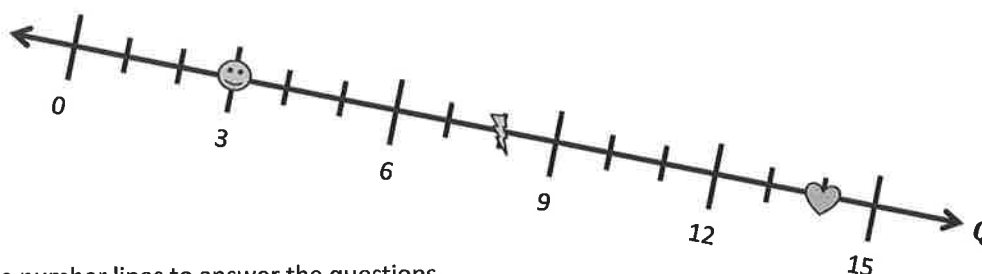


Name _____

Date _____

1. Answer the following questions using number line Q , below.

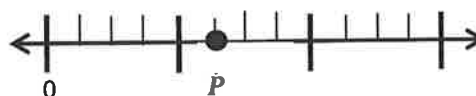
- What is the coordinate, or the distance from the origin, of the ● ? _____
- What is the coordinate of ⚡ ? _____
- What is the coordinate of ♥ ? _____
- What is the coordinate at the midpoint of ⚡ and ♥ ? _____



2. Use the number lines to answer the questions.

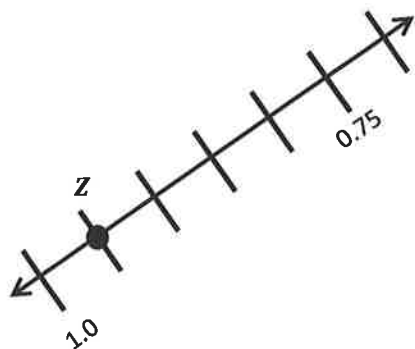


Plot T so its distance from the origin is 10.

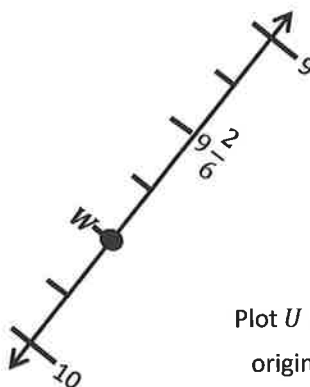


Plot M so its distance is $\frac{11}{4}$ from the origin.

What is the distance from P to M ?

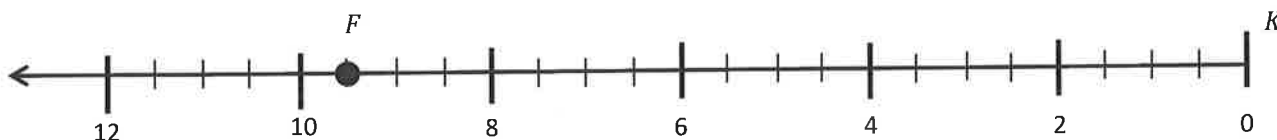


Plot a point that is 0.15 closer to the origin than Z .



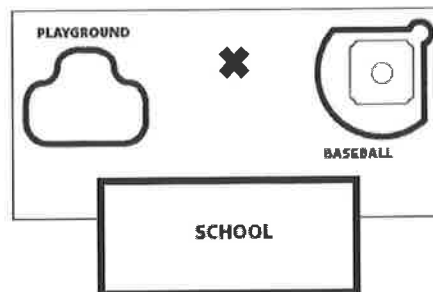
Plot U so that its distance from the origin is $\frac{3}{6}$ closer than that of W .

3. Number line K shows 12 units. Use number line K , below, to answer the questions.



- Plot a point at 1. Label it A .
- Label a point that lies at $3\frac{1}{2}$ as B .
- Label a point, C , whose distance from zero is 8 units farther than that of B .
The coordinate of C is _____.
- Plot a point, D , whose distance from zero is $\frac{6}{2}$ closer to zero than B .
The coordinate of D is _____.
- What is the coordinate of the point that lies $\frac{17}{2}$ farther from the origin than D ?
Label this point E .
- What is the coordinate of the point that lies halfway between F and D ?
Label this point G .

4. Mr. Baker's fifth-grade class buried a time capsule in the field behind the school. They drew a map and marked the location of the capsule with an X so his class can dig it up in ten years. What could Mr. Baker have done to make the capsule easier to find?

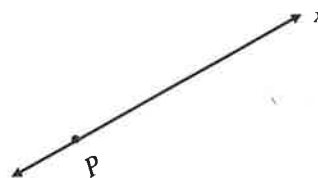


Name _____

Date _____

1.

- a. Use a set-square to draw a line perpendicular to the x -axis through point P . Label the new line as the y -axis.



- b. Choose one of the sets of perpendicular lines above and create a coordinate plane. Mark 5 units on each axis, and label them as whole numbers.

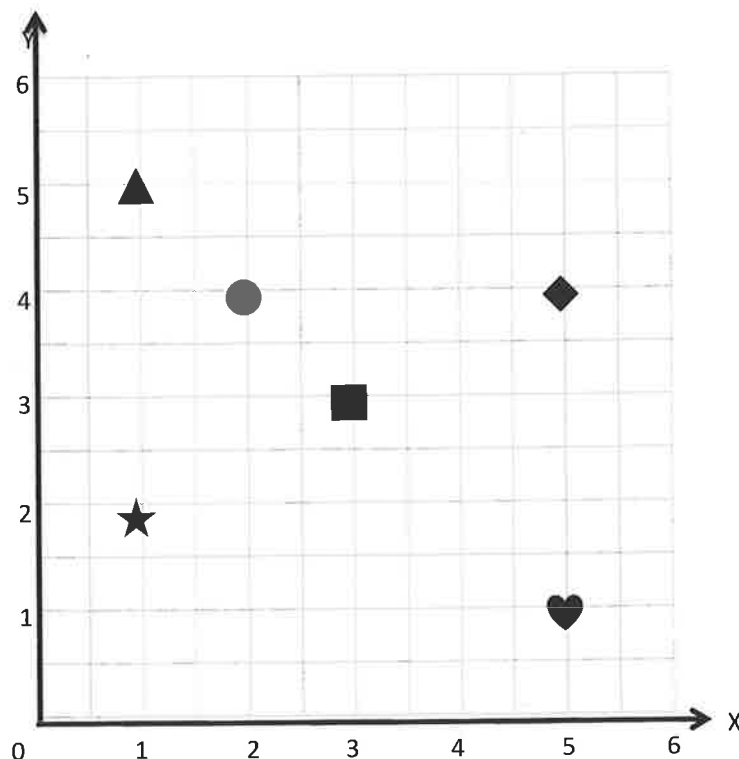
2. Use the coordinate plane to answer.

- a. Name the shape at each location.

x -coordinate	y -coordinate	Shape
2	4	
5	4	
1	5	
5	1	

- b. Which shape is 2 units from the x -axis?

- c. Which shape has the same x - and y -coordinate?



3. Use the coordinate plane to answer.

a. Name the coordinates of each shape.

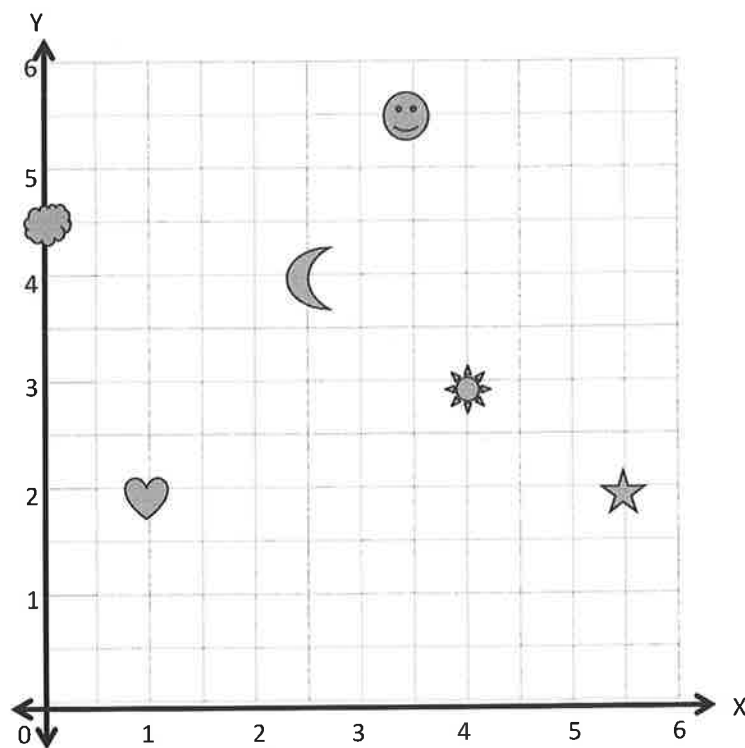
Shape	x-coordinate	y-coordinate
Moon		
Sun		
Heart		
Cloud		
Smiley Face		

b. Which 2 shapes have the same y-coordinate?

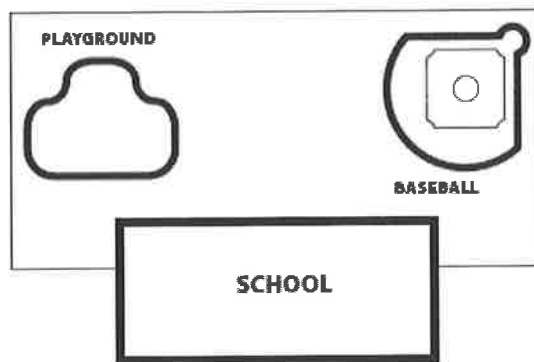
c. Plot an X at (2, 3).

d. Plot a square at $(3, 2\frac{1}{2})$.

e. Plot a triangle at $(6, 3\frac{1}{2})$.



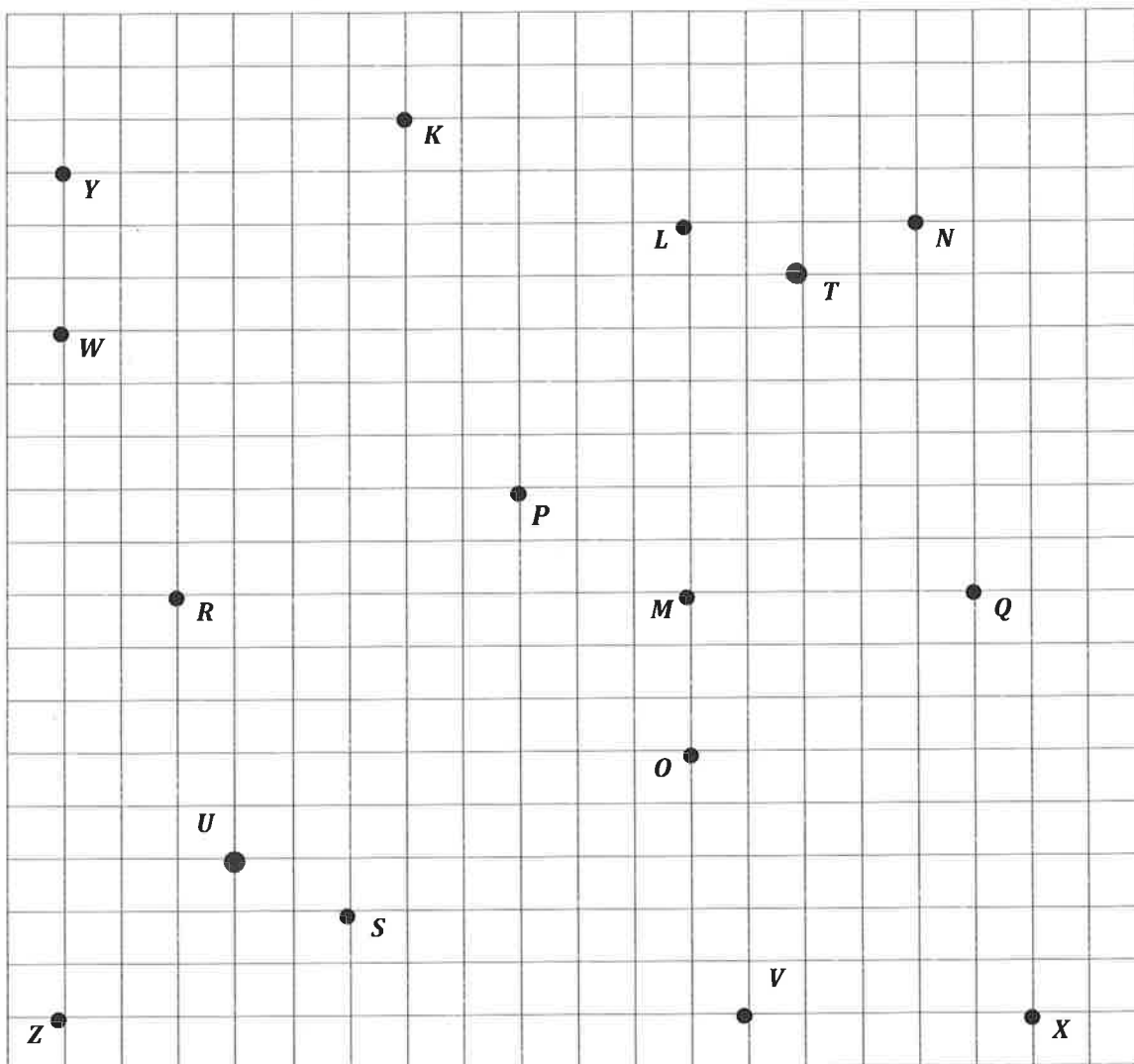
4. Mr. Palmer plans to bury a time capsule 10 yards behind the school. What else should he do to make naming the location of the time capsule more accurate?



Name _____

Date _____

1. Use the grid below to complete the following tasks.
 - a. Construct a y -axis that passes through points Y and Z .
 - b. Construct a perpendicular x -axis that passes through points Z and X .
 - c. Label the origin as O .
 - d. The y -coordinate of W is $2\frac{3}{5}$. Label the whole numbers along the y -axis.
 - e. The x -coordinate of V is $2\frac{2}{5}$. Label the whole numbers.



2. For all of the following problems, consider the points K through X on the previous page.

- Identify all of the points that have a y -coordinate of $1\frac{3}{5}$.
- Identify all of the points that have an x -coordinate of $2\frac{1}{5}$.
- Which point is $1\frac{3}{5}$ units above the x -axis *and* $3\frac{1}{5}$ units to the right of the y -axis? Name the point and give its coordinate pair.
- Which point is located $1\frac{1}{5}$ units from the y -axis?
- Which point is located $\frac{2}{5}$ units along the x -axis?
- Give the coordinate pair for each of the following points.
 T : _____ U : _____ S : _____ K : _____
- Name the points located at the following coordinates.
 $(\frac{2}{5}, \frac{3}{5})$ _____ $(3\frac{2}{5}, 0)$ _____ $(2\frac{1}{5}, 3)$ _____ $(0, 2\frac{3}{5})$ _____
- Plot a point whose x - and y -coordinates are equal. Label your point E .
- What is the name for the point on the plane where the two axes intersect? _____ Give the coordinates for this point. _____
- Plot the following points.
 $A: (1\frac{1}{5}, 1)$ $B: (\frac{1}{5}, 3)$ $C: (2\frac{4}{5}, 2\frac{2}{5})$ $D: (1\frac{1}{5}, 0)$
- What is the distance between L and N , or LN ?
- What is the distance MQ ?
- Would RM be greater, less than, or equal to $LN + MQ$?
- Leslie was explaining how to plot points on the coordinate plane to a new student, but she left off some important information. Correct her explanation so that it is complete.

“All you have to do is read the coordinates; for example, if it says $(4, 7)$, count four, then seven, and put a point where the two grid lines intersect.”

Name _____

Date _____

Your homework is to play at least one game of *Battleship* with a friend or family member. You can use the directions from class to teach your opponent. You and your opponent should record your guesses, hits, and misses on the sheet as you did in class.

When you have finished your game, answer these questions.

1. When you guess a point that is a hit, how do you decide which points to guess next?
2. How could you change the coordinate plane to make the game easier or more challenging?
3. Which strategies worked best for you when playing this game?

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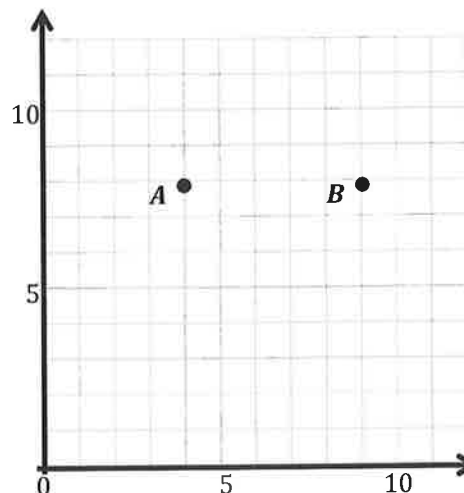
1. Use the coordinate plane to answer the questions.

- Use a straightedge to construct a line that goes through points A and B . Label the line g .
- Line g is parallel to the _____-axis and is perpendicular to the _____-axis.
- Draw two more points on line g . Name them C and D .
- Give the coordinates of each point below.

A : _____ B : _____

C : _____ D : _____

- What do all of the points on line g have in common?



- Give the coordinates of another point that falls on line g with an x -coordinate greater than 25.

2. Plot the following points on the coordinate plane to the right.

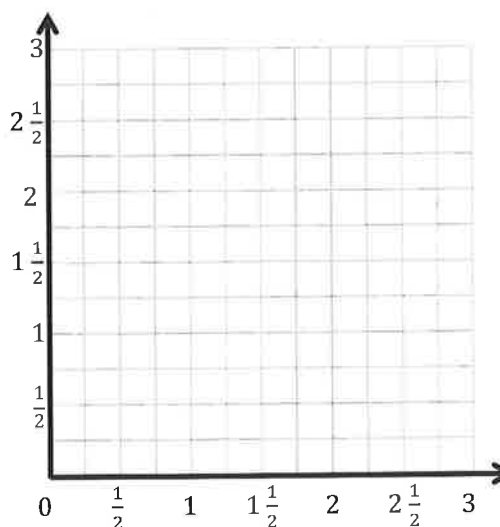
H : $(\frac{3}{4}, 3)$ I : $(\frac{3}{4}, 2\frac{1}{4})$

J : $(\frac{3}{4}, \frac{1}{2})$ K : $(\frac{3}{4}, 1\frac{3}{4})$

- Use a straightedge to draw a line to connect these points. Label the line f .
- In line f , $x =$ _____ for all values of y .
- Circle the correct word:

Line f is *parallel* *perpendicular* to the x -axis.

Line f is *parallel* *perpendicular* to the y -axis.



- What pattern occurs in the coordinate pairs that make line f vertical?

3. For each pair of points below, think about the line that joins them. For which pairs is the line parallel to the x -axis? Circle your answer(s). Without plotting them, explain how you know.
- a. $(3.2, 7)$ and $(5, 7)$ b. $(8, 8.4)$ and $(8, 8.8)$ c. $(6\frac{1}{2}, 12)$ and $(6.2, 11)$
4. For each pair of points below, think about the line that joins them. For which pairs is the line parallel to the y -axis? Circle your answer(s). Then, give 2 other coordinate pairs that would also fall on this line.
- a. $(3.2, 8.5)$ and $(3.22, 24)$ b. $(13\frac{1}{3}, 4\frac{2}{3})$ and $(13\frac{1}{3}, 7)$ c. $(2.9, 5.4)$ and $(7.2, 5.4)$
5. Write the coordinate pairs of 3 points that can be connected to construct a line that is $5\frac{1}{2}$ units to the right of and parallel to the y -axis.
- a. _____ b. _____ c. _____
6. Write the coordinate pairs of 3 points that lie on the y -axis.
- a. _____ b. _____ c. _____
7. Leslie and Peggy are playing *Battleship* on axes labeled in halves. Presented in the table is a record of Peggy's guesses so far. What should she guess next? How do you know? Explain using words and pictures.

$(5, 5)$	miss
$(4, 5)$	hit
$(3\frac{1}{2}, 5)$	miss
$(4\frac{1}{2}, 5)$	miss

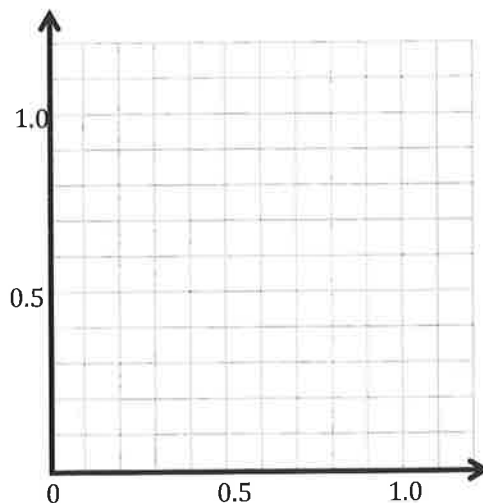
Name _____

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1. Plot and label the following points on the coordinate plane.

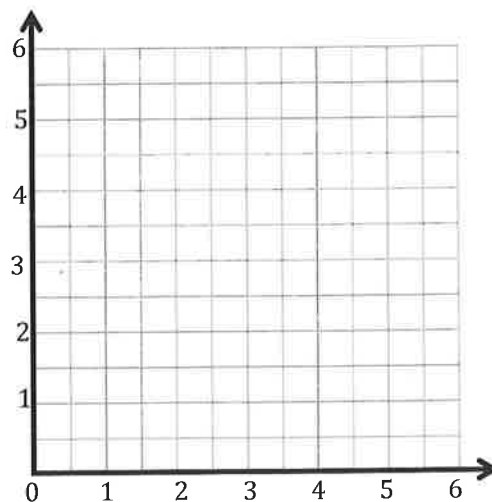
 $C: (0.4, 0.4)$ $A: (1.1, 0.4)$ $S: (0.9, 0.5)$ $T: (0.9, 1.1)$

- Use a straightedge to construct line segments \overline{CA} and \overline{ST} .
- Name the line segment that is perpendicular to the x -axis and parallel to the y -axis.
- Name the line segment that is parallel to the x -axis and perpendicular to the y -axis.
- Plot a point on \overline{CA} and name it E . Plot a point on line segment \overline{ST} and name it R .
- Write the coordinates of points E and R .

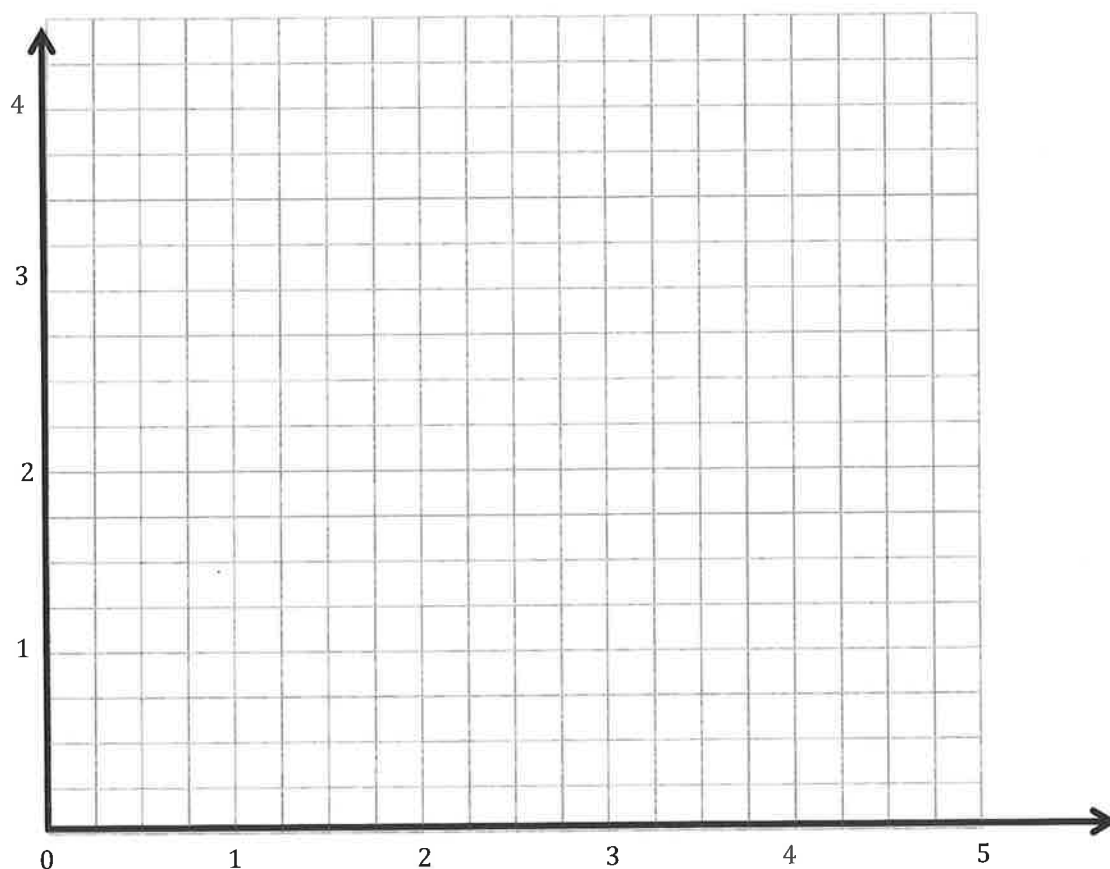
 $E (\quad , \quad)$ $R (\quad , \quad)$ 

2. Construct line
- m
- such that the
- y
- coordinate of every point is
- $1\frac{1}{2}$
- , and construct line
- n
- such that the
- x
- coordinate of every point is
- $5\frac{1}{2}$
- .

- Line m is _____ units from the x -axis.
- Give the coordinates of the point on line m that is 2 units from the y -axis. _____
- With a blue pencil, shade the portion of the grid that is less than $1\frac{1}{2}$ units from the x -axis.
- Line n is _____ units from the y -axis.
- Give the coordinates of the point on line n that is $3\frac{1}{2}$ units from the x -axis. _____
- With a red pencil, shade the portion of the grid that is less than $5\frac{1}{2}$ units from the y -axis.



3. Construct and label lines e , r , s , o on the plane below.
- Line e is 3.75 units above the x -axis.
 - Line r is 2.5 units from the y -axis.
 - Line s is parallel to line e but 0.75 farther from the x -axis.
 - Line o is perpendicular to lines s and e and passes through the point $(3\frac{1}{4}, 3\frac{1}{4})$.
4. Complete the following tasks on the plane.
- Using a blue pencil, shade the region that contains points that are more than $2\frac{1}{2}$ units and less than $3\frac{1}{4}$ units from the y -axis.
 - Using a red pencil, shade the region that contains points that are more than $3\frac{3}{4}$ units and less than $4\frac{1}{2}$ units from the x -axis.
 - Plot a point that lies in the double shaded region, and label its coordinates.

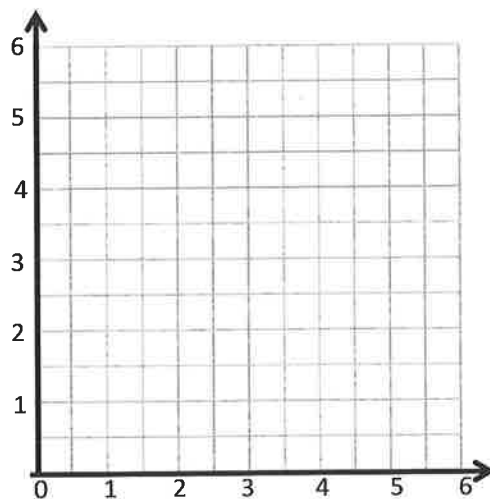


Name _____

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1. Complete the chart. Then, plot the points on the coordinate plane.

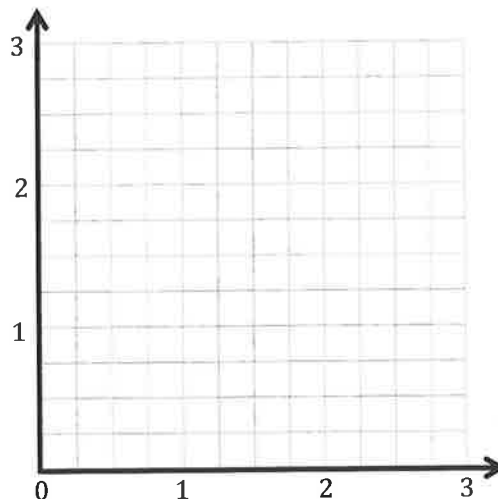
x	y	(x, y)
2	0	
$3\frac{1}{2}$	$1\frac{1}{2}$	
$4\frac{1}{2}$	$2\frac{1}{2}$	
6	4	



- Use a straightedge to draw a line connecting these points.
- Write a rule showing the relationship between the x - and y - coordinates of points on this line.
- Name two other points that are also on this line. _____

2. Complete the chart. Then, plot the points on the coordinate plane.

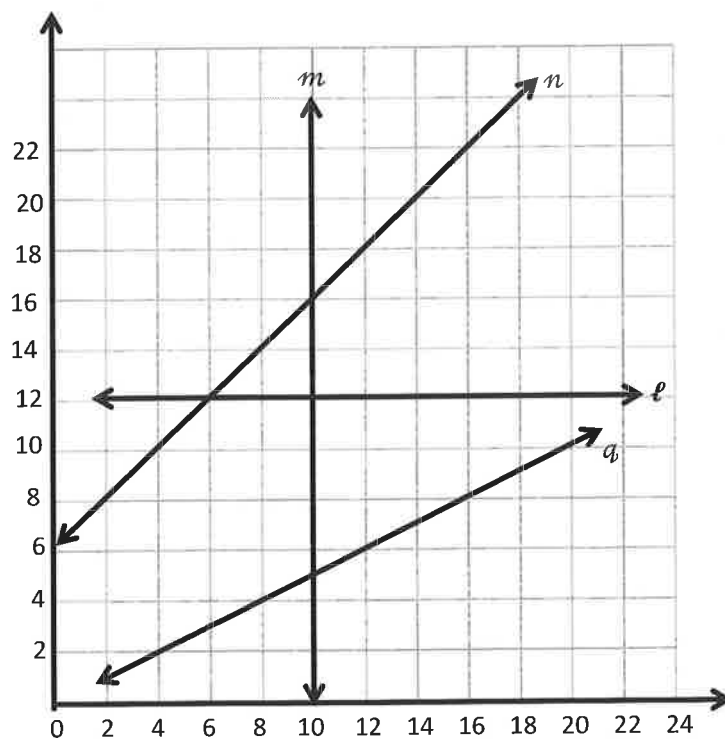
x	y	(x, y)
0	0	
$\frac{1}{4}$	$\frac{3}{4}$	
$\frac{1}{2}$	$1\frac{1}{2}$	
1	3	



- Use a straightedge to draw a line connecting these points.
- Write a rule showing the relationship between the x - and y - coordinates for points on the line.
- Name two other points that are also on this line. _____

3. Use the coordinate plane to answer the following questions.

- For any point on line m , the x -coordinate is _____.
- Give the coordinates for 3 points that are on line n .
- Write a rule that describes the relationship between the x - and y -coordinates on line n .
- Give the coordinates for 3 points that are on line q .



- Write a rule that describes the relationship between the x - and y -coordinates on line q .
- For each point, identify a line on which each of these points lie.

(10,3.2) _____ (12.4, 18.4) _____ (6.45, 12) _____ (14, 7) _____

Name _____

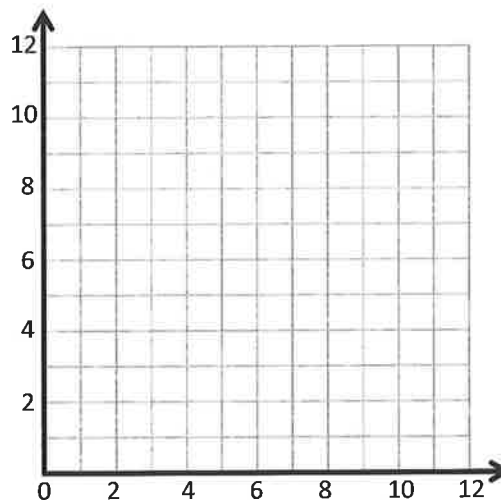
Date _____

1. Complete this table such that each y -coordinate is 4 more than the corresponding x -coordinate.

x	y	(x, y)

- Plot each point on the coordinate plane.
- Use a straightedge to construct a line connecting these points.
- Give the coordinates of 2 other points that fall on this line with x -coordinates greater than 18.

(_____, _____) and (_____, _____).

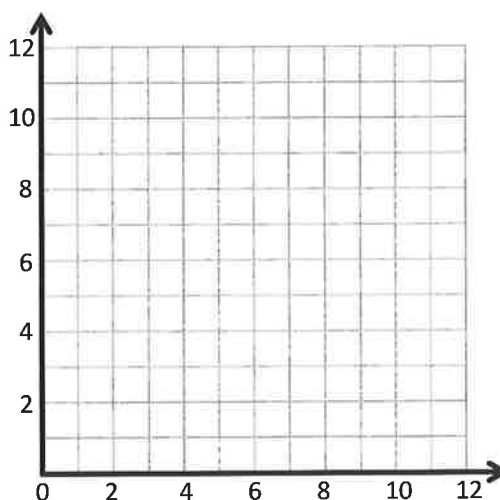


2. Complete this table such that each y -coordinate is 2 times as much as its corresponding x -coordinate.

x	y	(x, y)

- Plot each point on the coordinate plane.
- Use a straightedge to draw a line connecting these points.
- Give the coordinates of 2 other points that fall on this line with y -coordinates greater than 25.

(_____, _____) and (_____, _____).



3. Use the coordinate plane below to complete the following tasks.

- a. Graph these lines on the plane.

line ℓ : x is equal to y

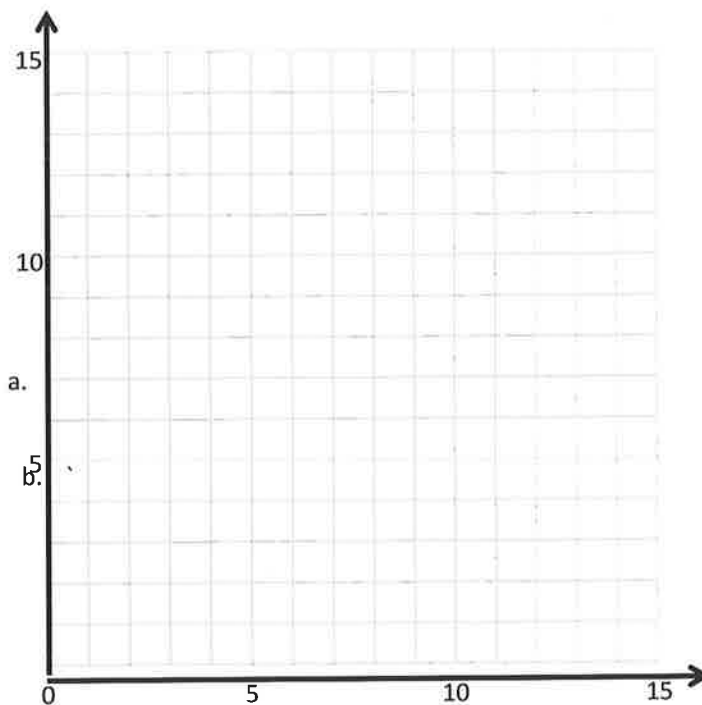
	x	y	(x, y)
A			
B			
C			

line m : y is 1 less than x

	x	y	(x, y)
G			
H			
I			

line n : y is 1 less than twice x

	x	y	(x, y)
S			
T			
U			



- b. Do any of these lines intersect? If yes, identify which ones, and give the coordinates of their intersection.

- c. Are any of these lines parallel? If yes, identify which ones.

- d. Give the rule for another line that would be parallel to the lines you listed in (c).

Name _____

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1. Complete the table for the given rules.

Line *a*

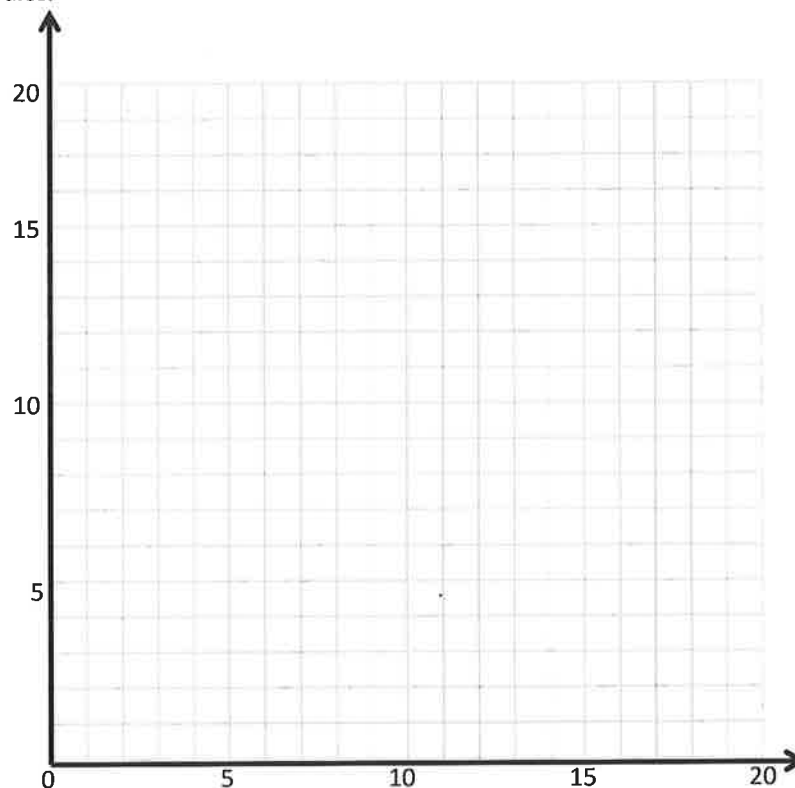
Rule: *y* is 1 less than *x*

<i>x</i>	<i>y</i>	(<i>x</i> , <i>y</i>)
1		
4		
9		
16		

Line *b*

Rule: *y* is 5 less than *x*

<i>x</i>	<i>y</i>	(<i>x</i> , <i>y</i>)
5		
8		
14		
20		



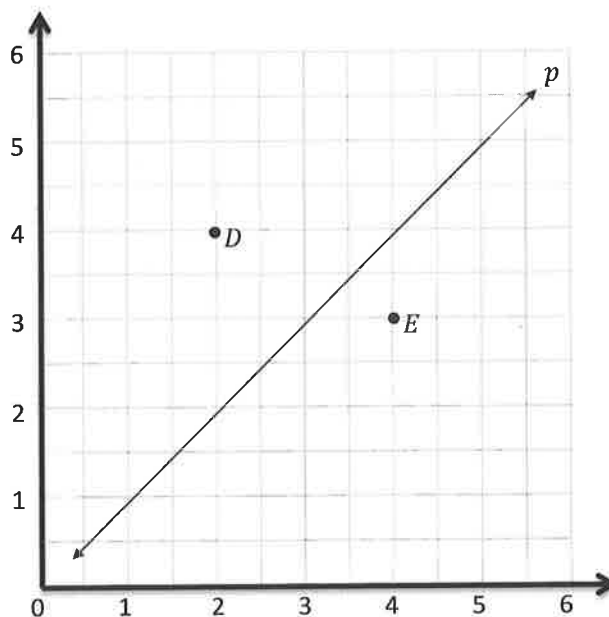
- Construct each line on the coordinate plane.
 - Compare and contrast these lines.
- c. Based on the patterns you see, predict what line *c*, whose rule is 7 less than *x*, would look like. Draw your prediction on the plane above.

Name _____

Date _____

1. Use the coordinate plane to complete the following tasks.

- Line p represents the rule x and y are equal.
- Construct a line, d , that is parallel to line p and contains point D .
- Name 3 coordinates pairs on line d .



- Identify a rule to describe line d .

- Construct a line, e , that is parallel to line p and contains point E .
- Name 3 points on line e .

- Identify a rule to describe line e .

- Compare and contrast lines d and e in terms of their relationship to line p .

2. Write a rule for a fourth line that would be parallel to those above and that would contain the point $(5\frac{1}{2}, 2)$. Explain how you know.

3. Use the coordinate plane below to complete the following tasks.

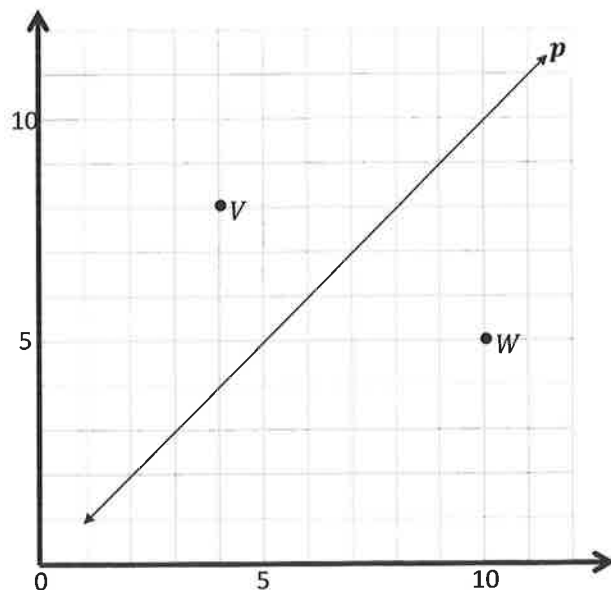
- Line p represents the rule x and y are equal.
- Construct a line, v , that contains the origin and point V .
- Name 3 points on line v .

- Identify a rule to describe line v .

- Construct a line, w , that contains the origin and point W .

- Name 3 points on line w .

- Identify a rule to describe line w .



- Compare and contrast lines v and w in terms of their relationship to line p .
- What patterns do you see in lines that are generated by multiplication rules?

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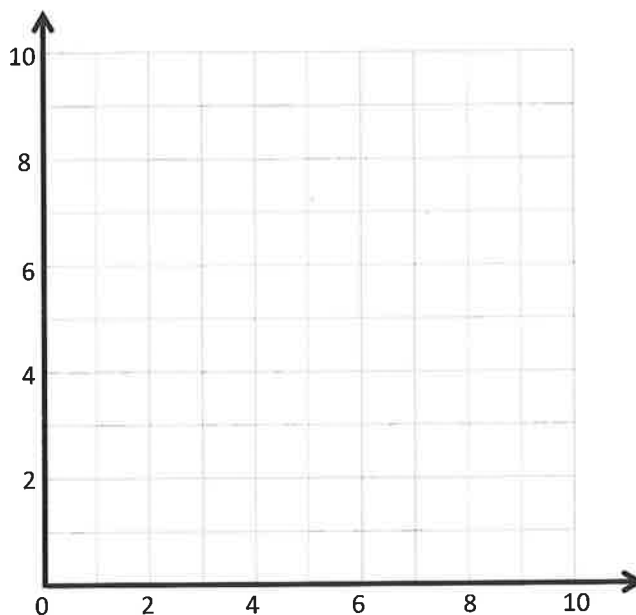
1. Complete the tables for the given rules.

Line ℓ Rule: Double x

x	y	(x, y)
1		
2		
3		

Line m Rule: Double x , then subtract 1

x	y	(x, y)
1		
2		
3		



- Draw each line on the coordinate plane above.
 - Compare and contrast these lines.
 - Based on the patterns you see, predict what the line for the rule *double x , then add 1* would look like. Draw your prediction on the plane above.
2. Circle the point(s) that the line for the rule *multiply by $\frac{1}{2}$ then add 1* would contain.
- $(0, \frac{1}{2})$ $(2, 1\frac{1}{4})$ $(2, 2)$ $(3, \frac{1}{2})$
- Explain how you know.
 - Give two other points that fall on this line.

3. Complete the tables for the given rules.

Line ℓ

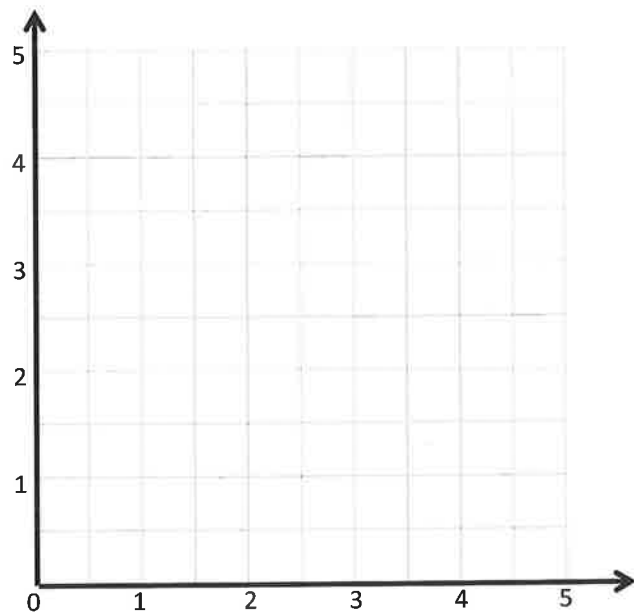
Rule: *Halve x , then add 1*

x	y	(x, y)
0		
1		
2		
3		

Line m

Rule: *Halve x , then add $1\frac{1}{4}$*

x	y	(x, y)
0		
1		
2		
3 ^{d.}		
e.		



- Draw each line on the coordinate plane above.
- Compare and contrast these lines.

- Based on the patterns you see, predict what the line for the rule *halve x , then subtract 1* would look like. Draw your prediction on the plane above.

4. Circle the point(s) that the line for rule *multiply by $\frac{3}{4}$, then subtract $\frac{1}{2}$* would contain.

$(1, \frac{1}{4})$

$(2, \frac{1}{4})$

$(3, 1\frac{3}{4})$

$(3, 1)$

- Explain how you know.

- Give two other points that fall on this line.

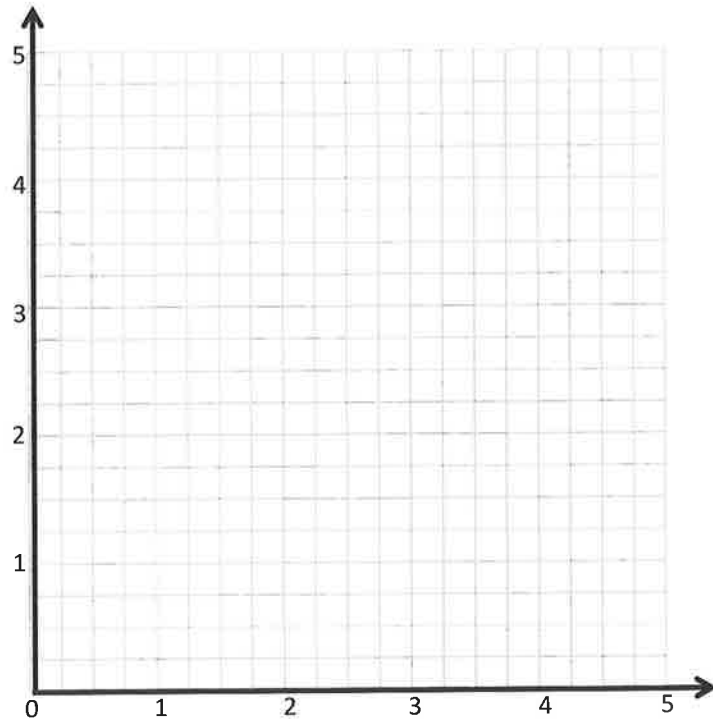
Name _____

Date _____

1. Write a rule for the line that contains the points $(0, \frac{1}{4})$ and $(2\frac{1}{2}, 2\frac{3}{4})$.

- a. Identify 2 more points on this line, then draw it on the grid below.

Point	x	y	(x, y)
B			
C			



- b. Write a rule for a line that is parallel to \overleftrightarrow{BC} and goes through point $(1, 2\frac{1}{4})$.

2. Give the rule for the line that contains the points $(1, 2\frac{1}{2})$ and $(2\frac{1}{2}, 2\frac{1}{2})$.

- a. Identify 2 more points on this line, then draw it on the grid above.

Point	x	y	(x, y)
G			
H			

- b. Write a rule for a line that is parallel to \overleftrightarrow{GH} .

3. Give the rule for a line that contains the point $(\frac{3}{4}, 1\frac{1}{2})$, using the operation or description below. Then, name 2 other points that would fall on each line.

a. Addition: _____

Point	x	y	(x, y)
T			
U			

b. A line parallel to the x -axis: _____

Point	x	y	(x, y)
G			
H			

c. Multiplication: _____

Point	x	y	(x, y)
A			
B			

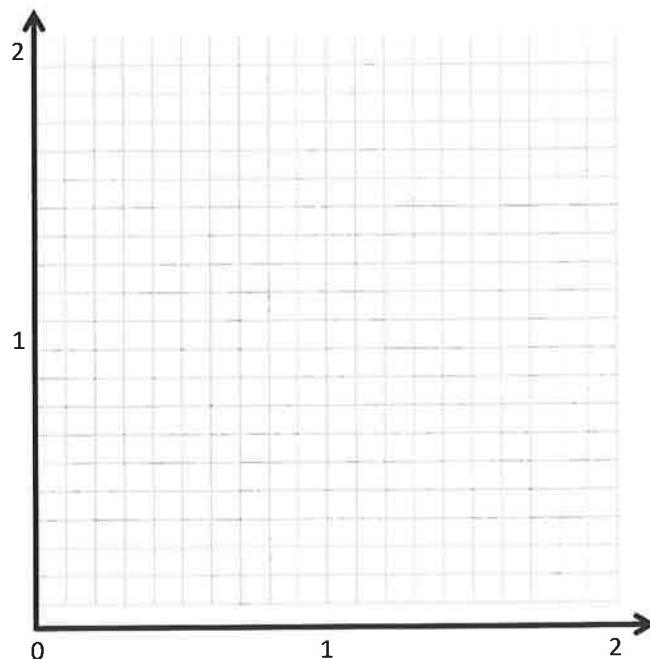
d. A line parallel to the y -axis: _____

Point	x	y	(x, y)
V			
W			

e. Multiplication with addition: _____

Point	x	y	(x, y)
R			
S			

4. On the grid, two lines intersect at $(1.2, 1.2)$. If line a passes through the origin, and line b contains the point at $(1.2, 0)$, write a rule for line a and line b .

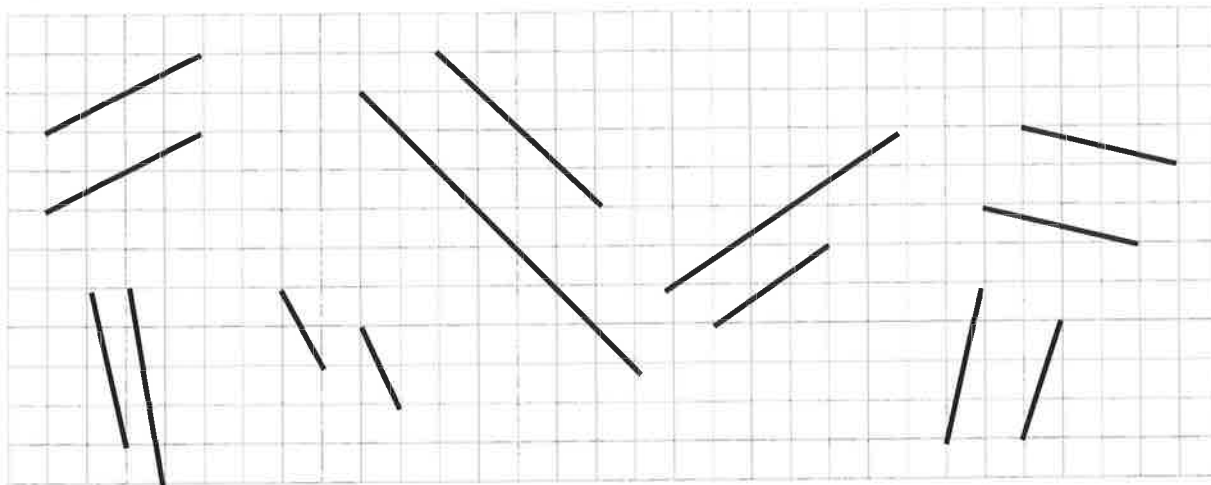


Name _____

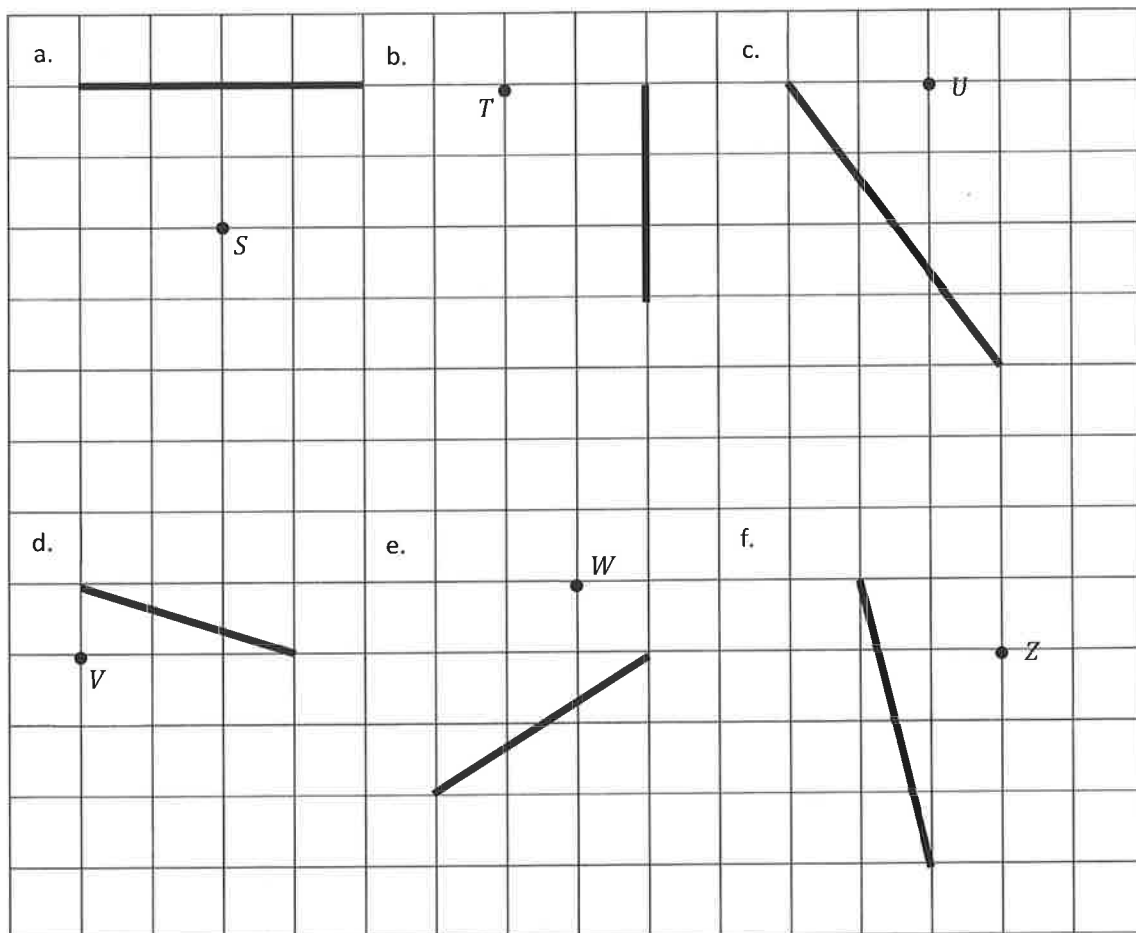
Date _____

1. Use your right angle template and straightedge to draw at least three sets of parallel lines in the space below.

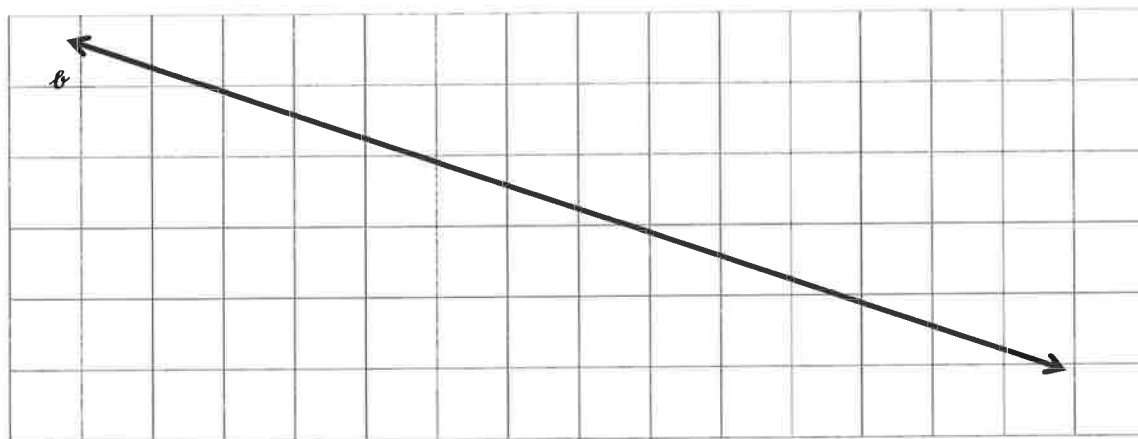
2. Circle the segments that are parallel.



3. Use your straightedge to draw a segment parallel to each segment through the given point.



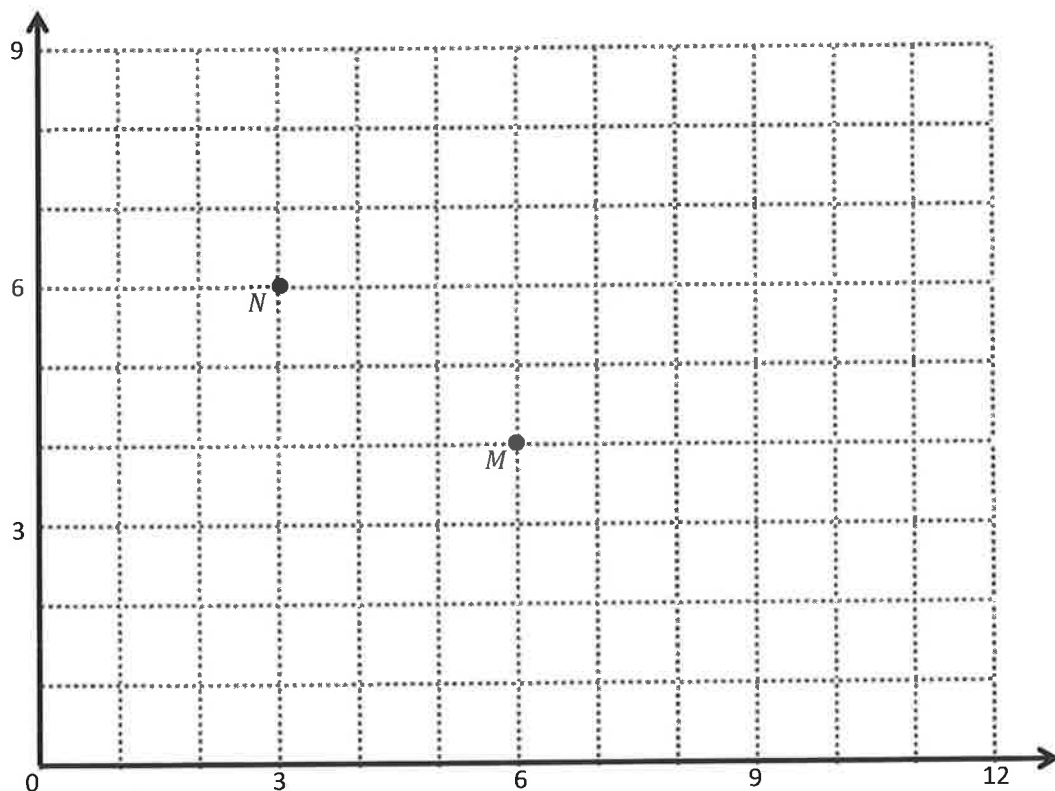
4. Draw 2 different lines parallel to line ℓ .



Name _____

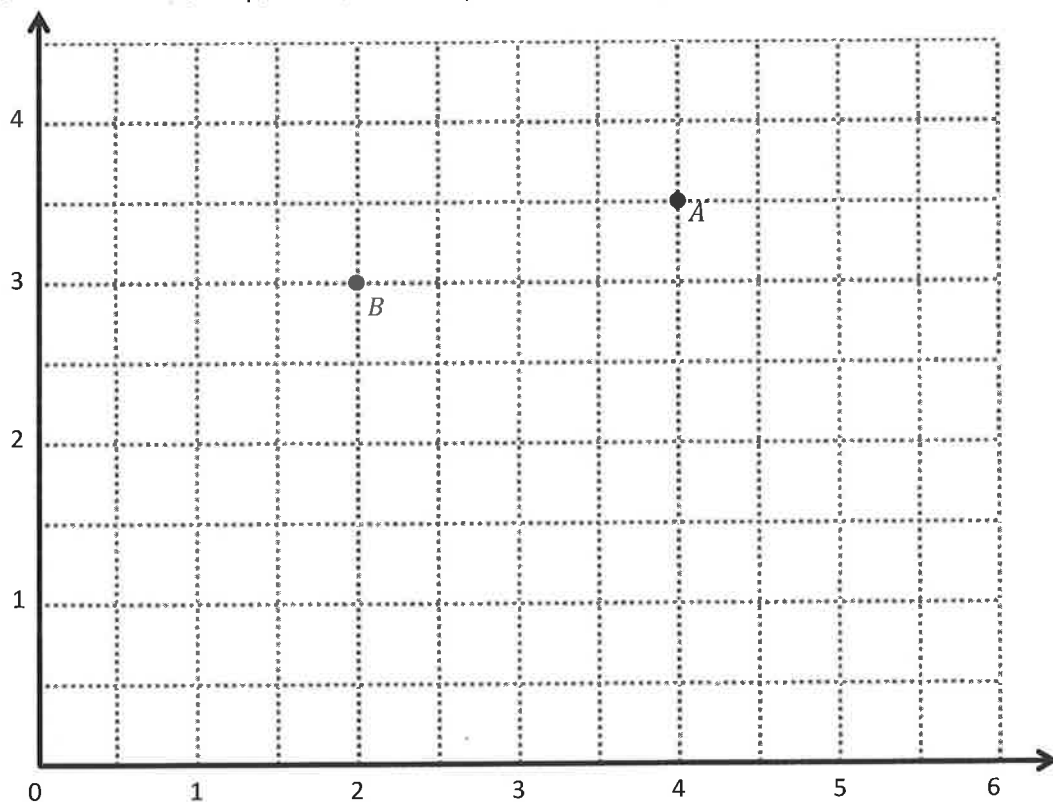
Date _____

1. Use the coordinate plane below to complete the following tasks.



- Identify the locations of M and N . M : (____, ____) N : (____, ____)
- Draw \overline{MN} .
- Plot the following coordinate pairs on the plane.
 J : (5, 7) K : (8, 5)
- Draw \overrightarrow{JK} .
- Circle the relationship between \overline{MN} and \overrightarrow{JK} . $\overline{MN} \perp \overrightarrow{JK}$ $\overline{MN} \parallel \overrightarrow{JK}$
- Give the coordinates of a pair of points, F and G , such that $\overrightarrow{FG} \parallel \overline{MN}$.
 F : (____, ____) G : (____, ____)
- Draw \overrightarrow{FG} .

2. Use the coordinate plane below to complete the following tasks.



- Identify the locations of A and B . $A: (\underline{\quad}, \underline{\quad})$ $B: (\underline{\quad}, \underline{\quad})$
- Draw \overrightarrow{AB} .
- Generate coordinate pairs for C and D , such that $\overrightarrow{AB} \parallel \overrightarrow{CD}$.
 $C: (\underline{\quad}, \underline{\quad})$ $D: (\underline{\quad}, \underline{\quad})$
- Draw \overrightarrow{CD} .
- Explain the pattern you used when generating coordinate pairs for C and D .
- Give the coordinates of a point, F , such that $\overrightarrow{AB} \parallel \overrightarrow{EF}$.

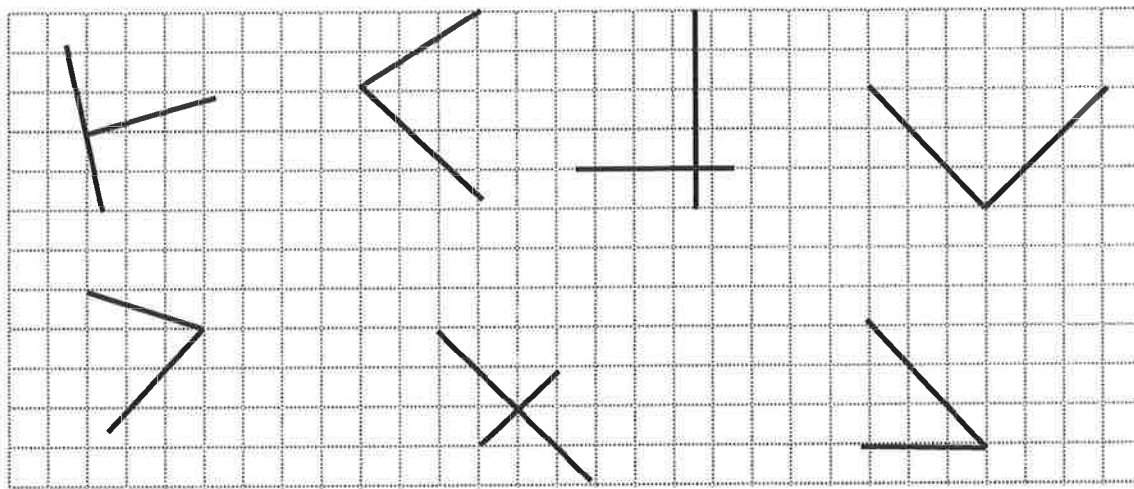
$$E: (2\frac{1}{2}, 2\frac{1}{2}) \quad F: (\underline{\quad}, \underline{\quad})$$

- Explain how you chose the coordinates for F .

Name _____

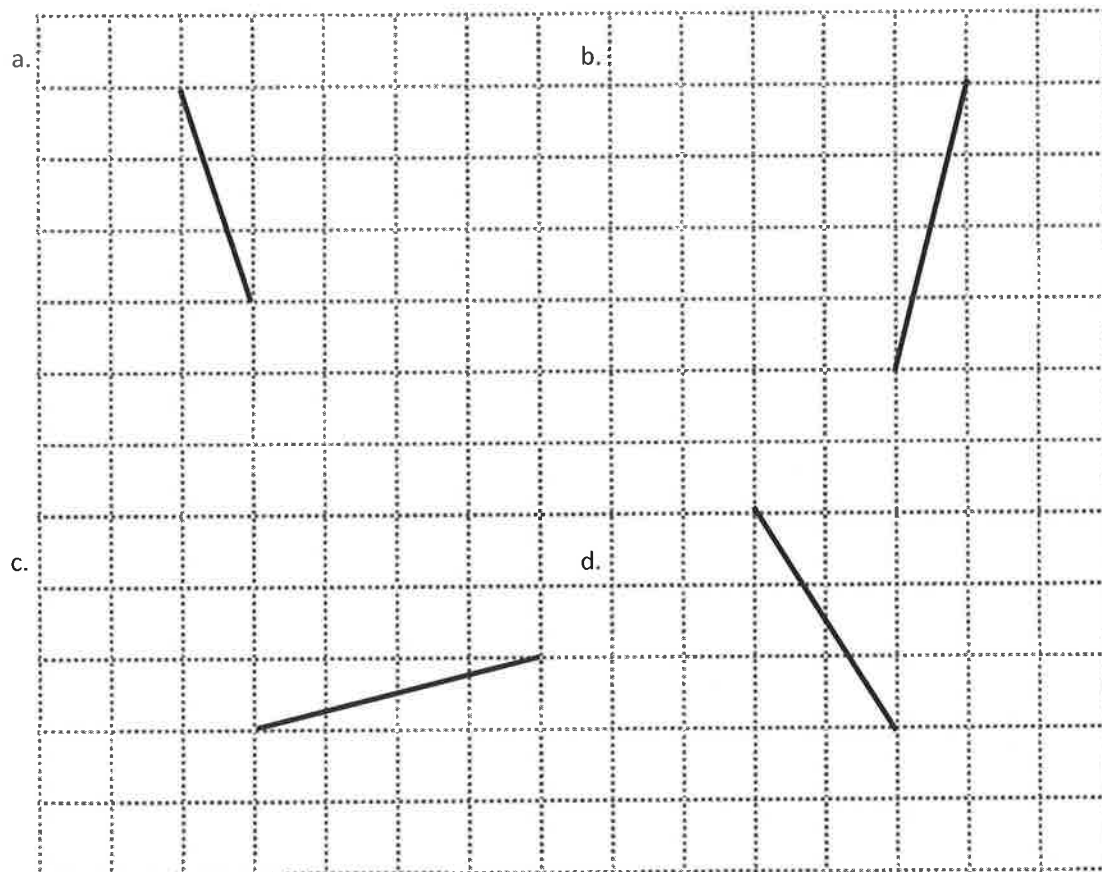
Date _____

1. Circle the pairs of segments that are perpendicular.

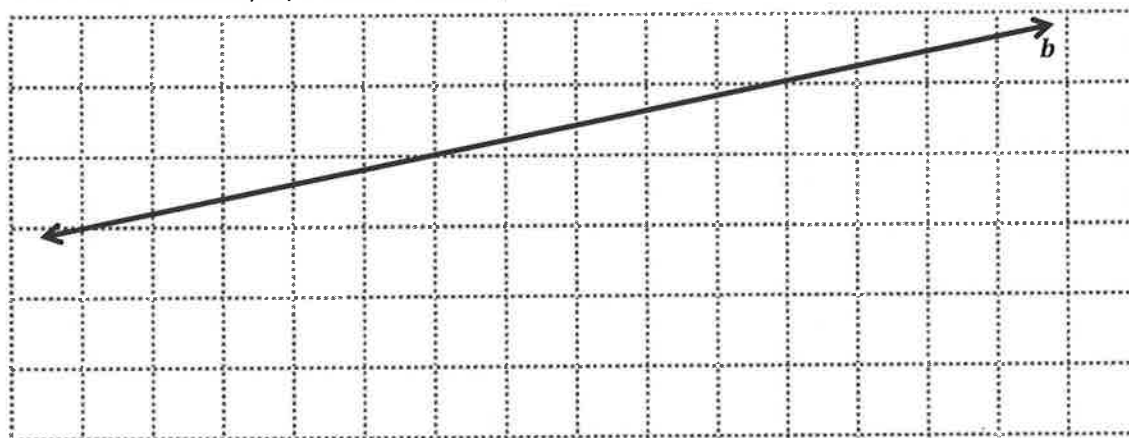


2. In the space below, use your right triangle templates to draw at least 3 different sets of perpendicular lines.

3. Draw a segment perpendicular to each given segment. Show your thinking by sketching triangles as needed.



4. Draw 2 different lines perpendicular to line b .

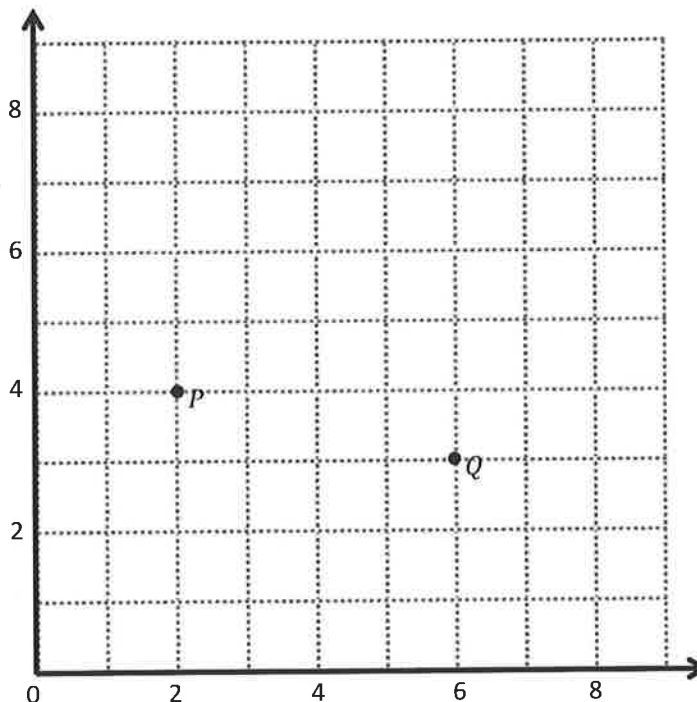


Name _____

Date _____

1. Use the coordinate plane below to complete the following tasks.

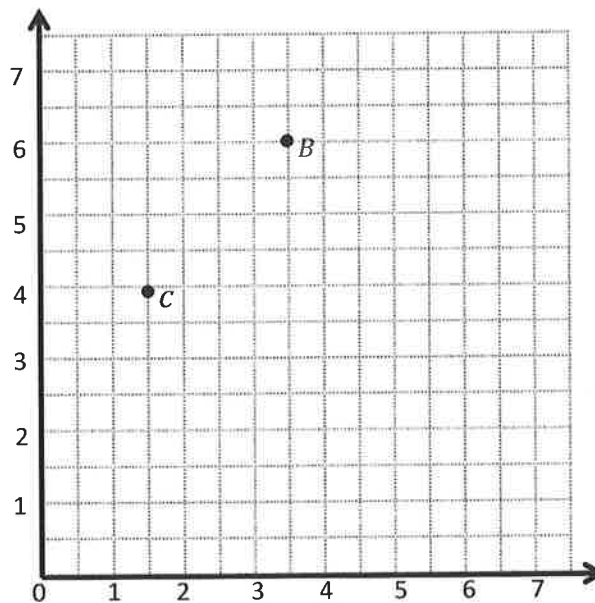
- a. Draw \overline{PQ} .
- b. Plot point $R(7, 7)$.
- c. Draw \overline{PR} .
- d. Explain how you know $\angle PQR$ is a right angle without measuring it.



- e. Compare the coordinates of points P and Q . What is the difference of the x -coordinates? The y -coordinates?
- f. Compare the coordinates of points P and R . What is the difference of the x -coordinates? The y -coordinates?
- g. What is the relationship of the differences you found in (e) and (f) to the triangles of which these two segments are a part?

2. Use the coordinate plane below to complete the following tasks.

- Draw \overline{BC} .
- Plot point $D(3, 2\frac{1}{2})$.
- Draw \overline{BD} .
- Explain how you know $\angle BCD$ is a right angle without measuring it.



- Compare the coordinates of points B and C . What is the difference of the x -coordinates? The y -coordinates?

- Compare the coordinates of points B and D . What is the difference of the x -coordinates? The y -coordinates?

- What is the relationship of the differences you found in (e) and (f) to the triangles of which these two segments are a part?

3. \overrightarrow{ST} contains the following points. $S: (2, 3)$ $T: (9, 6)$

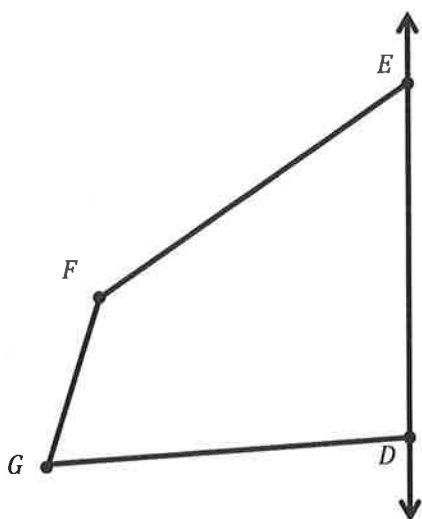
- Give the coordinates of a pair of points, U and V , such that $\overrightarrow{ST} \perp \overrightarrow{UV}$.

$S: (\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ $T: (\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$

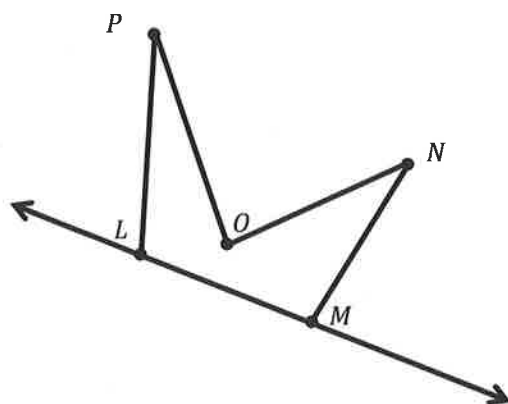
Name _____

Date _____

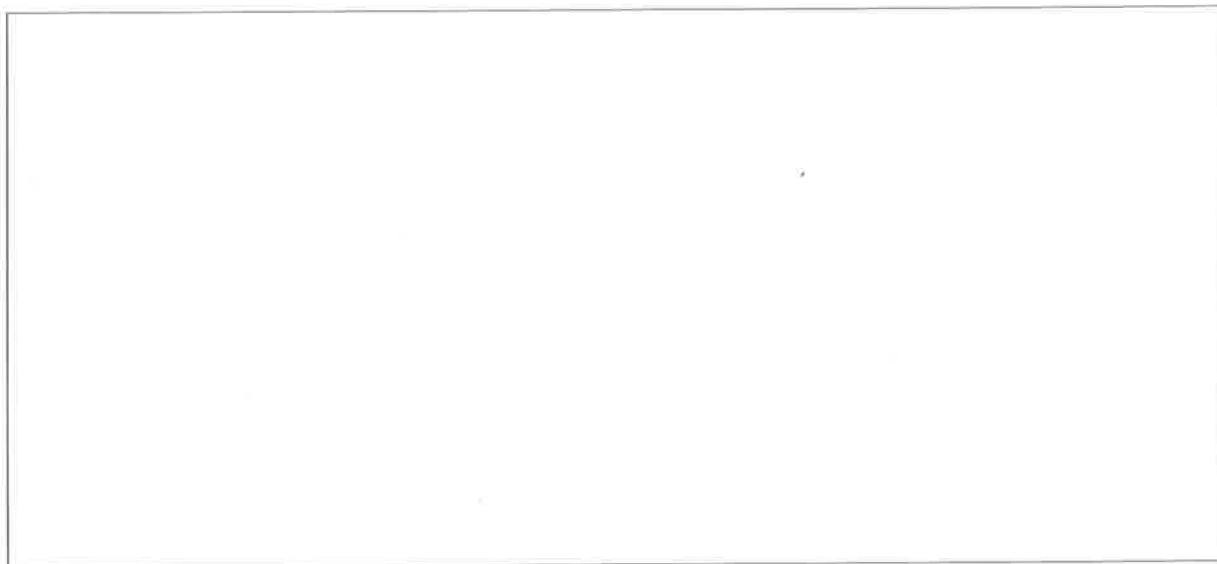
1. Draw to create a figure that is symmetric about \overleftrightarrow{DE} .



2. Draw to create a figure that is symmetric about \overleftrightarrow{LM} .



3. Complete the following construction in the space below.
- Plot 3 non-collinear points, G , H , and I .
 - Draw \overline{GH} , \overline{HI} , and \vec{IG} .
 - Plot point J , and draw the remaining sides, such that quadrilateral $GHIJ$ is symmetric about \vec{IG} .



4. In the space below, use your tools to draw a symmetric figure around a line.

Name _____

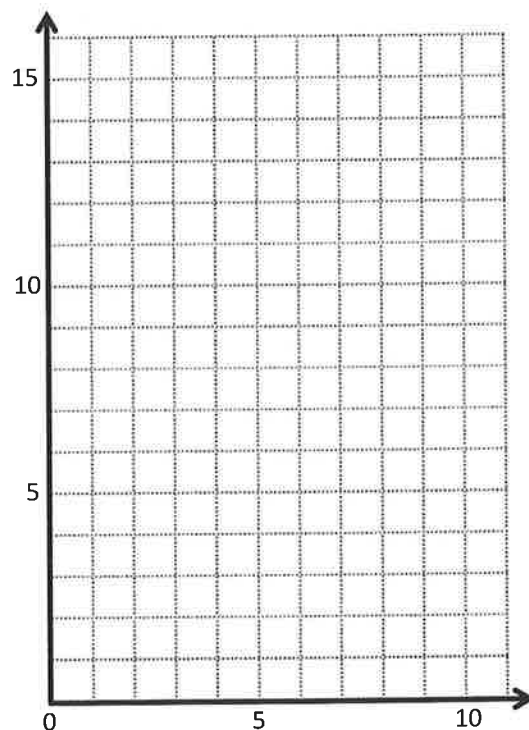
Date _____

1. Use the plane at right to complete the following tasks.
- Draw a line s whose rule is, x is always 5.
 - Plot the points from Table A on the grid in order. Then draw line segments to connect the points in order.

Table A

(1, 13)
(1, 12)
(2, 10)
(4, 9)
(4, 3)
(1, 2)
(5, 2)

Table B



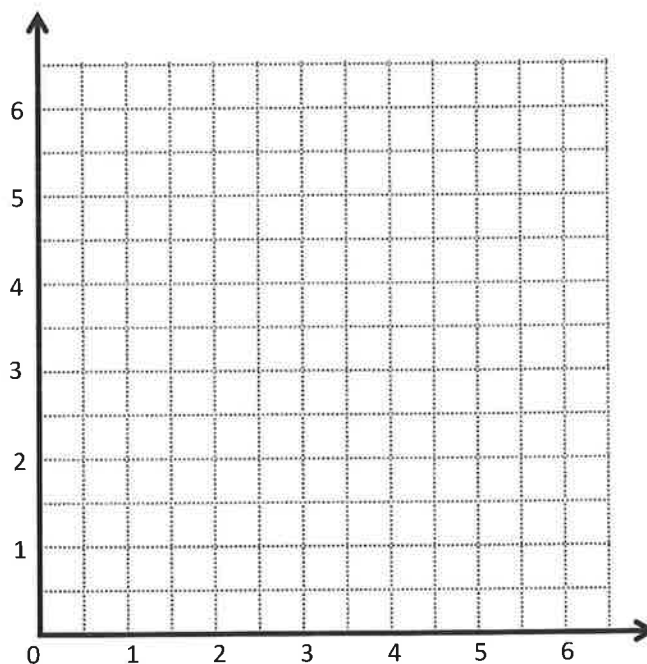
- Complete the drawing to create a figure that is symmetric about line s . For each point in Table A, record the symmetric point on the other side of s .
- Compare the y -coordinates in Table A with those in Table B. What do you notice?
- Compare the x -coordinates in Table A with those in Table B. What do you notice?

2. Use the plane at right to complete the following tasks.
- Draw a line p whose rule is, y is equal to x .
 - Plot the points from Table A on the grid in order. Then draw line segments to connect the points.

Table A

$(\frac{1}{2}, \frac{1}{2})$
$(1, 2)$
$(1\frac{1}{2}, 1\frac{1}{2})$
$(2, 4)$
$(3\frac{1}{2}, 3\frac{1}{2})$
$(4, 4\frac{1}{2})$
$(5, 5)$

Table B

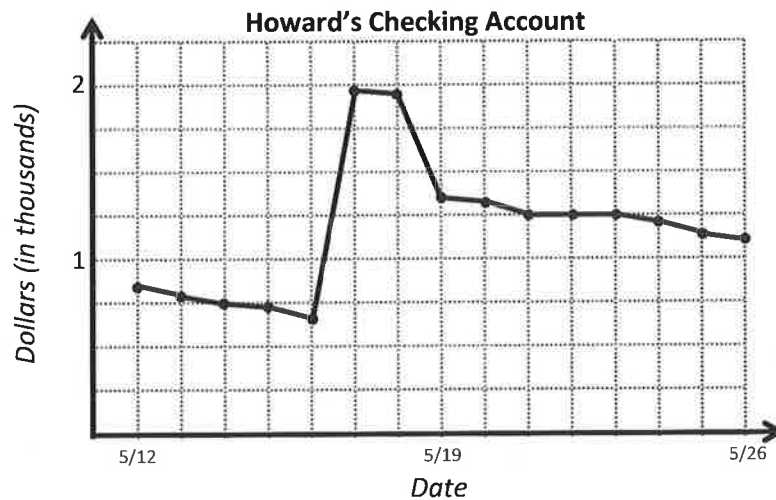


- Complete the drawing to create a figure that is symmetric about line p . For each point in Table A, record the symmetric point on the other side of the line p in Table B.
- Compare the y -coordinates in Table A with those in Table B. What do you notice?
- Compare the x -coordinates in Table A with those in Table B. What do you notice?

Name _____

Date _____

1. The line graph below tracks the balance of Howard's checking account, at the end of each day, between May 12 and May 26. Use the information in the graph to answer the questions that follow.



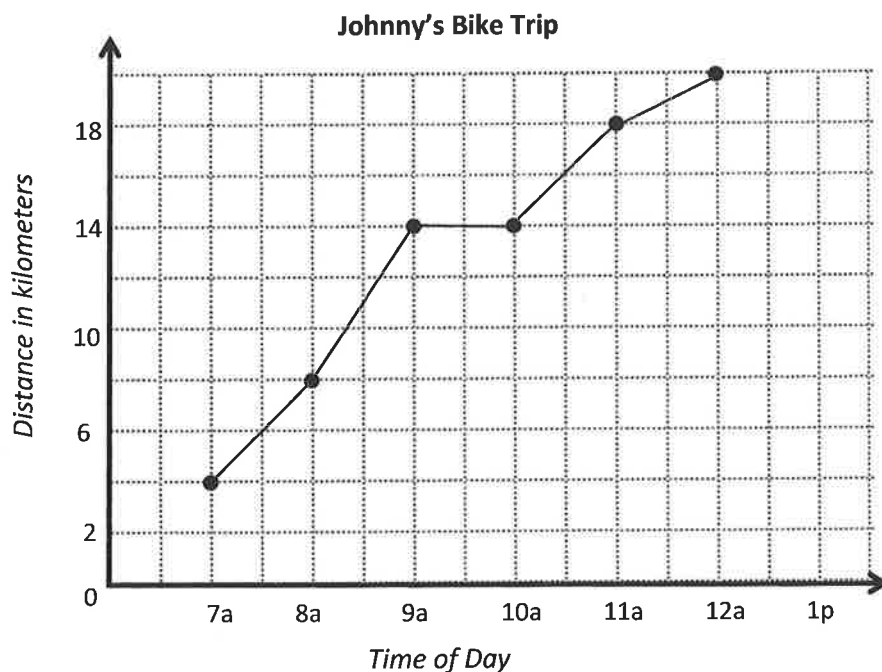
- About how much money does Howard have in his checking account on May 21?
- If Howard spends \$250 from his checking account on May 26, about how much money will he have left in his account?
- Explain what happened with Howard's money between May 21 and May 23.
- Howard received a payment from his job that went directly into his checking account. On which day did this most likely occur? Explain how you know.
- Howard bought a new television during the time shown in the graph. On which day did this most likely occur? Explain how you know.

Name _____

Date _____

1. Use the graph to answer the questions.

Johnny left his home at 6 a.m. and kept track of the number of kilometers he traveled at the end of each hour of his trip. He recorded the data in a line graph.



- a. How far did Johnny travel in all? How long did it take?
- b. Johnny took a one-hour break to have a snack and take some pictures. What time did he stop?
How do you know?

- c. Did Johnny cover more distance before his break or after? Explain.
- d. Between which two hours did Johnny ride 4 kilometers?
- e. Which hour did Johnny ride the fastest? Explain how you know.